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# **“I want to do it all day!” – Students’ experiences of classroom movement integration**

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## **Abstract:**

Whole-of-school physical activity programming is being advocated internationally, with movement integration in the classroom considered an effective method to increase physical activity throughout the school day. Students (N = 135) from two primary schools in the West of Ireland participated in this study. Data were collected using draw-and-write (N = 135) and focus group interviews (N = 24). Three themes were evident across data types and revealed that students thought the *Moving to Learn Ireland* active lessons were fun, that they learned academic content better, and the lessons contributed to their fitness development. In conclusion, children who participated in this study positively perceived movement integration lessons in their classrooms. The results of this study can inform future movement integration interventions.

## **Highlights:**

- Movement integration in classrooms is an effective way to increase physical activity levels.
- Primary school students believe movement lessons are fun and that they help them learn.
- Primary school students connect movement in the classroom to their fitness development.
- Students positively perceive movement in the classroom and want more movement in school.

## **Keywords:**

Movement integration, primary school students, physical activity, fun.

## 1. Introduction

Complemented by a heightened awareness of increasing time spent in sedentary behavior by young people (Harrington et al., 2016), there is an increasing body of literature dedicated to school-based physical activity promotion and participation beyond the physical education curriculum (e.g., Martin & Murtagh, 2016; de Greeff et al., 2016; Mullender-Wijnsma et al., 2015). This idea is currently being advocated internationally in the form of a whole-of-school physical activity program (Institute of Medicine [IOM], 2013). According to the IOM definition, whole-of-school physical activity programming should include several opportunities for children to be active throughout the school day, including classroom movement integration (IOM, 2013).

The goal of movement integration is to reduce sedentary time throughout the school day by making use of the time students are in their normal classrooms (Webster, Russ, Vazou, Goh, & Erwin, 2015). For the purposes of this study, movement integration refers specifically to the integration of movement into academic lessons, but this term can also be used to describe other types of physical activity in the classroom (i.e., activity breaks, active routines, etc). Movement integration in the classroom has received increased attention in the literature especially as it relates to a whole-of-school approach to physical activity promotion. Several recent publications describe the impact of classroom-based physical activity, or movement integration, on physical activity levels (Martin & Murtagh, 2016; Murtagh et al., 2013) body mass index and fitness (de Greeff et al., 2016) and academic achievement (Donnelly & Lambourne, 2011; Mullender-Wijnsma et al., 2015). Further, teachers' perceptions of movement in the classroom have recently, and frequently been reported in the literature (i.e., Author et al., 2016; Routen, Johnston, Glazebrook, & Sherar, 2018). However, there is less published research that considers

the role of the student as a participant in movement integration programs and their perceptions of such programs in schools.

## **2. Theory**

The World Health Organization (WHO) recommends that children should receive 60 minutes of moderate to vigorous physical activity daily (WHO, 2010). Children spend the majority of their waking hours during weekdays (Monday-Friday) at school, therefore it is important to consider how the school influences their physical activity behaviors and experiences. Social ecological models (Emmons, 2000) provide a framework to consider how different levels of influence interact and in turn impact students and have been used to specifically consider school-based physical activity (Langille & Rodgers, 2010). An ecological model of health behavior, which forms the basis for social ecological model, outlines five sources of influence on an individual (McLeroy, Bibeau, Steckler, & Glanz, 1988). At the center of the ecological model of health behavior is the intrapersonal level where the child resides. Working outwards from there is the interpersonal level (i.e., friends, teachers, families, etc.). Next is the institutional level where the school exists, then the community level (i.e., relationships between institutions). Finally, the outer ring houses the policy level (McLeroy et al., 1988). Health behaviors, to which physical activity applies, have long been examined using ecological models because they consider multiple levels of influence (Sallis, Owen, & Fisher, 2008). The school is a complex, social environment where children exist and learn to behave, thus influencing their current and future development (Bronfenbrenner, 1989), and this extends to include their physical activity behaviors. With this logic, the experiences children have with physical activity in school will likely directly impact their physical activity behaviors well into the future.

Based on an ecological model, a conceptual framework for Comprehensive School Physical Activity Programs (CSPAP) was recently developed that positions the physical activity behaviors of the student at the epicenter (Carson, Castelli, Beighle, & Erwin, 2014). A CSPAP is a whole-of-school physical activity promotion model that is consistent with the Institute of Medicine approach referenced earlier, and includes components of quality physical education, physical activity during the school day, physical activity before and after school, community involvement and staff engagement (Center for Disease Control, 2013). The CSPAP conceptual framework considers the multiple levels of influence as they relate to the physical activity behaviors of children in schools. For the purposes of this study, we consider CSPAP components (in this case physical activity during school), facilitators' characteristics (i.e., teachers), leaders, and culture. However, our motivation for considering this conceptual framework stems from the placement of the student at the epicenter of the model and the associated lack of literature that considers students as not only consumer of movement integration programs, but also a key informant/stakeholder. From an ecological perspective, understanding how these multiple systems levels interact to influence school children is essential.

Considering an ecological model of health behaviors, the support of an associated conceptual framework for physical activity promotion based within schools and a recent call to take into account the role of children as consumers of school-based programs (Morse & Allensworth, 2015), it seems logical that the student perspective is very much worth examining. Therefore, the purpose of this study was to describe students' experiences of movement in the classroom based on their participation in lessons included in the *Moving to Learn Ireland* classroom movement integration resource.

### **3. Materials and Methods**

*Moving to Learn Ireland* is a movement integration resource developed for Irish primary school teachers as a tool to help reduce the amount of sedentary time in the classroom. The resource includes a variety of movement-based lessons which are tied to academic content that supports the subjects of English, Irish and Maths (primary school core subjects in Ireland). The resource was divided by grade level (i.e., Junior Infants through 2<sup>nd</sup> class, and 3<sup>rd</sup> class through 6<sup>th</sup> class), and included several lessons per subject for each developmental level in addition to a section on managing movement and a section that included general “get the blood flowing” activity breaks. Each of the *Moving to Learn Ireland* lessons were designed by university faculty with the intent of being incorporated into the primary school curriculum, including matching lessons to specific learning goals and objectives. For example, one of the lessons, “Invisible Skipping Rope Maths,” calls for the teacher (or students) to call out or write a math problem somewhere in the classroom, and students use an “invisible skipping rope” to jump the answer. Teachers in the two schools which participated in this study completed training related to the implementation of the resource, and were encouraged to incorporate at least three *Moving to Learn Ireland* lessons into their classroom per week. Author, et al., 2016 includes a report of teacher perceptions and additional information on the context of the resource.

### *3.1. Participants*

The participants in this study were 135 primary school students from two schools, one rural and one urban, in the West of Ireland. The two schools were selected as a convenience sample based on a connection provided through a local health-related non-profit located in the same county as both schools. The rural school (RS), situated on the outskirts of a small village, has a student population of 58 students, three classroom teachers and three support staff. This school employs a multi-grade learning structure with students from Junior Infants-1<sup>st</sup> Class (ages

5-7), from 2<sup>nd</sup>-3<sup>rd</sup> class (ages 7-9), and 4<sup>th</sup>-6<sup>th</sup> class (ages 9-12) grouped together. The urban school (US) has a relatively diverse student population of approximately 420 students, and 27 staff members (16 classroom teachers and 11 support staff/learning assistants). This school was recently awarded an Active School Flag based on its commitment to school-based physical activity promotion (see Author et al., 2015, for more information on the Active School Flag).

Table 1 – Study Participants

Class	Draw-and-Write	Focus Group
Jr. Infants – 1 <sup>st</sup> Class (RS; students aged 5-8) <sup>1</sup>	19	3
2 <sup>nd</sup> – 3 <sup>rd</sup> Class (RS; students aged 7-9)	15	4
4 <sup>th</sup> – 6 <sup>th</sup> Class (RS; students aged 10-13)	20	4
Sr. Infants (US; students aged 5-7)	28	4
1 <sup>st</sup> Class A (US; students aged 6-8) <sup>2</sup>	19	2
1 <sup>st</sup> Class B (US; students aged 6-8) <sup>2</sup>	15	2
5 <sup>th</sup> Class (US; students aged 11-12)	19	5
<sup>1</sup> Only 1 <sup>st</sup> class students were present because Infant students were released from school prior to the interview time.		
<sup>2</sup> Students from the two 1 <sup>st</sup> classes at the US participated in one focus group interview.		

The larger study, to which the study we report here is aligned with included multiple components, and the students recruited to participate were selected based on their teacher volunteering to participate in the ‘student and teacher perceptions’ component of the study. As a

result, all of the students in the RS were invited to participate and at the US students from a Senior Infants class, two 1<sup>st</sup> classes and a 5<sup>th</sup> class were invited. Information letters and consent forms were sent home with the children by the classroom teachers in order to obtain permission to participate from their legal guardian(s). All of the students from the classes who were recruited to participate provided consent to participate in the draw-and-write activity and to potentially participate in a focus group interview. The first and third author visited each school on a day agreed with the principals of the schools and conducted both the draw-and-write as well as the focus group interviews. All students who were present on the day (n=135) completed the draw-and-write. With respect to the focus group interviews (n=24), after the class completed the draw-and-write activity, classroom teachers selected the students who participated in the interviews (see Table 1 for a breakdown by class).

### *3.2. Instruments*

#### *3.2.1. Draw-and-Write.*

Drawings were selected as a means of data collection in this study because it was believed they would allow children to convey elements of the targeted activities that were important or prominent in their mind and not necessarily what we, as researchers, were using as a frame of reference. Butler, Gross and Hayne (1995) noted that children may provide a greater amount of information when they initiate the retrieval, explaining that children would provide more of their own retrieval cues as they drew a picture. They also demonstrated that drawing, in conjunction with direct questions, yielded the most comprehensive and accurate accounts by young children rather than the use of drawings on their own or interviews on their own. A similar methodology was successfully used to seek out students' input when considering the development of an engaging school environment (Bland & Sharma-Brymer, 2012).



While the interest and use of draw-and-write as a way to collect children's views, thoughts, perceptions and emotions related to health remains consistent, the same method has received less attention in exploring children's perceptions of physical activity opportunities. However, the draw-and-write method has been used to explore children's perceptions of physical activity opportunities during recess and children's understanding of cancer and views on health-related behavior (including physical activity) (Knowles, Parnell, Stratton, Ridgers, 2013; Knighting, Rowa-Dewar, Malcolm, Kearney & Gibson, 2011).

### *3.2.2. Focus Group Interviews*

In order to learn more about the experiences of the students participating in the movement integration lessons, a selection of students from each class (N = 24) also participated in focus group interviews. Table 1 includes a breakdown of the focus group participants. Semi-structured, focus group interviews were conducted at each school with a group of students from the same class or grade level. A semi-structured approach allowed the interviewers the freedom to follow up on questions based on previously provided answers. Focus groups are an appropriate methodology in this study given the desire to seek different viewpoints based on each students' unique experiences with the movement lessons (Kvale & Brinkmann, 2009). While both individual and focus group interviews have benefits when involving children, the developmental level of the children in this study (particularly the younger children) influenced the decision to include focus groups because they facilitate the ability of children to elaborate on ideas of their own and those presented by their peers (Heary & Hennessy, 2006). Questions sought to understand what students liked and disliked about school, and how they felt about moving in the classroom. Some sample questions that were asked include: What are your favorite things about school? What are some things you don't like about school? When you're in

your classroom, what are you usually doing? Are you usually standing up and moving around or are you usually sitting at your desk (when you are in your classroom)? Do you think you learn better when you're moving or when you're sitting? After you do the moving around activities and you have to sit back down in your desk, how does your body feel? If you could choose, would you have less movement in your classroom or more movement during the day?

The focus group interviews took place in the study room (RS) and in the library (US) and the first and third authors were present for each interview. The interviews ranged in length from 11 minutes to 27 minutes with the older students' interviews lasting on average longer than those involving younger students. All of the interviews were voice recorded with the students' permission and were transcribed verbatim prior to analysis.

### *3.2.3. Field Notes*

While not a primary data source, one of the researchers who was present in the classroom during the draw-and-write activities took field notes. These field notes specifically detail differences in the procedures observed from class-to-class (i.e., teacher involvement, student seating arrangements, etc.) and unique observations made in some classrooms (i.e., the way students illustrated sweat, student interpretations of words they were using in the 'write' portion, etc.).

### *3.3. Procedure*

Approximately eight weeks after the *Moving to Learn Ireland* lessons were introduced in their classes, students (n =135) were given an A4 sheet of paper that asked them to complete their name and included the direction, "Please draw yourself in an ACTIVE English, Maths or Irish lesson and write a few sentences to tell me how you feel when you are participating in the

lesson you drew!” Below this prompt was a box for the drawing and below the box six lines for the students to complete their narrative. This activity was administered during class time in the presence of the class teacher and a member of the research team. After each class completed the draw-and-write activity, which took on average 15 minutes per class, the teacher selected students to leave the classroom to participate in the focus group interview.

### *3.4. Data Analysis*

The 135 completed draw-and-write data were shared across the research team. Each researcher ( $n = 3$ ; the authors of this paper) was responsible for inductively coding samples of draw-and-writes from two or three classes and compiled an initial coding list that documented the characteristics of each drawing (Gamradt, & Staples, 1994), and any particular observations made by the researcher. On completion, the second author independently quantified the extent to which documented characteristics (e.g., physical activity, alone or group activity) appeared throughout the full complement of draw-and-writes ( $n = 135$ ). This analysis was then also completed by the third author to ensure the accuracy of the quantifiable nature of the data. Table 2 denotes the frequency of the notable draw-and-write characteristics for each class.

Inductive analysis was employed to determine specific themes that were evident from the focus group interview data and the narrative component of the draw-and-write samples. This process included several initial readings of the six interview transcripts (87 pages) and the narratives occurred prior to the identification of codes associated with patterns that occur repeatedly in the data (Le Compte & Schensul, 1999). These patterns are presented in the results as themes. Analysis was initially completed by the first author and themes were independently verified by the third author. The frequently observed characteristics from the drawings, which are reported below, support the themes derived from the interviews and narratives. The field

notes taken in the classrooms were used to clarify characteristics of the completed draw-and-writes. For example, in one classroom the field notes described how the students were drawing sweat on their faces – a feature of the drawings that might not have been interpreted correctly without this clarification. All participants are identified by their gender (stated on the class roster provided by the teacher) and their grade level in the results. Student quotes from the draw-and-write samples accurately reflect the grammar and spelling of the individual students.

### *3.5. Trustworthiness*

Several steps were taken to ensure the trustworthiness of the data and associated analysis. During data collection, multiple data sources were considered and the inclusion of field notes provided context to the children's drawings. Every effort was taken to make the procedures used for data collection consistent across classes (specific issues with this are reported within the study limitations). When considering analysis, triangulation between data sources (i.e., draw-and-write, focus group interviews, and field notes) was used to ensure that themes were evident across data types (Patton, 2002). Analysis of the data and resulting themes were independently verified by one of the authors, and any discrepant cases were resolved. Negative cases are reported as appropriate within the results (i.e., a case where a participant did not support the reported theme).

## **4. Results**

The results indicate three common themes when considering student participation in *Moving to Learn Ireland*: an inherent enjoyment of movement, an appreciation of learning through movement, and the perceived physical benefits of moving the classroom. The findings associated with each are presented below.

### *4.1. An inherent enjoyment of movement*

Fun and enjoyment is conveyed throughout the draw-and-write sample and conveyed in different, yet complementary, ways. In many drawings, as stated previously, smiling faces convey a level of enjoyment that is further clarified through accompanying narratives. For example, one drawing (see Figure 1) by a 5<sup>th</sup> class girl (US) includes two girls smiling, surrounded by cards with words on them and the narrative: “I like this game because it is really fun and good ☺.”

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Figure 1 – Draw-and-Write (5<sup>th</sup> Class, US, Girl)

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The interview data also supported the notion that “fun” was important and many students mentioned that they get bored in school because they sit too much. One Senior Infants girl (US) captured this when she said, “Oh I don’t really like sitting down all the time.” A 5<sup>th</sup> class, girl (US) explained that on a regular day at school they, “just sit in our seats and she [the teacher] talks and we do work. It’s boring.” When students in 1<sup>st</sup> class at the urban school mentioned that they were “usually sitting in our desks” the interviewer asked if they liked that, and one girl said, “No, not really. Your legs feel a bit weird after sitting in it [the desk],” to which a boy her in class added, “and bored.” Similarly, a 6<sup>th</sup> class boy (RS) said that he liked the movement lessons because, “before we did it we were bored, but then when we do it, even after we sit down, we’re still not bored. We’re kind of giddy. Keeps us happy for a little while.”

When asked how they felt when they were moving in the classroom, a girl in Senior Infants (US) said, “It makes me feel happy, kind of excited.” A 2<sup>nd</sup> class girl (RS), said, “I want to do it all day” and a 4<sup>th</sup> class girl (RS) said, “It’s way better for you to be active, and you’re happier doing your work.” Some students made the specific connection that they could move and not take away from academic time. For example, a 6<sup>th</sup> class boy (RS) said, “You’re doing your subject, you’re moving about and having fun while doing it.”

When we consider the higher frequency observations across the whole sample of draw-and-write (Table 2), multiple people, smiling faces and a lone person are the three most frequent characteristics. The first and third characteristics are perhaps not surprising given the nature of the task that was to ‘draw yourself’ and that some students may have interpreted that literally while others chose to contextualize their involvement with others. The involvement with others could be linked to fun or enjoyment given that often in classrooms students are working individually with little interaction with their peers. The smiling faces are a welcome pattern

conveying students' enjoyment of the particular activities. Tables, desks and chairs are the next most frequently noted observation of drawings. It is significant that in almost all of the drawings where these items are present students are not sitting in/at them, and they are depicted smiling which could imply that students enjoy being out of their desks more than they like sitting at them.

Table 2 – Characteristics of <i>Moving to Learn Ireland</i> Draw-and-Write								
Class	Jr. Infants - 1 <sup>st</sup> class	Sr. Infants	1 <sup>st</sup> class (A)	1 <sup>st</sup> class (B)	2 <sup>nd</sup> - 3 <sup>rd</sup> class	4 <sup>th</sup> - 6 <sup>th</sup> class	5 <sup>th</sup> class	Total
Number of drawings	19	28	15	19	15	20	19	135
<b>Drawing Characteristics</b>								
Outdoors	2	16	-	-	-	2	-	20
One person	4	13	8	13	2	14	6	60
Multiple people	13	12	5	6	10	5	12	63
Table(s) / desk(s) / chair(s)	14	5	9	10	6	5	-	49
Teacher	1	-	1	2	5	-	-	9
Smiling	7	25	-	13	7	9	-	61
Cards	10	-	1	8	-	4	4	27
Music notes / symbols	4	1	-	-	-	-	-	5
Books	2	-	2	1	1	-	-	6
Screen / TV / blackboard	-	-	1	-	3	1	-	5
Jumping	-	-	-	-	-	8	-	8
Words	-	-	9	-	-	1	1	11
Number matrix	-	-	-	-	-	-	14	14
Sum	-	-	-	3	-	-	-	3
Arms raised	-	1	-	3	-	-	-	4
Skipping	-	11	-	-	-	-	-	11
Weights / dumbbells	-	6	-	-	-	-	-	6

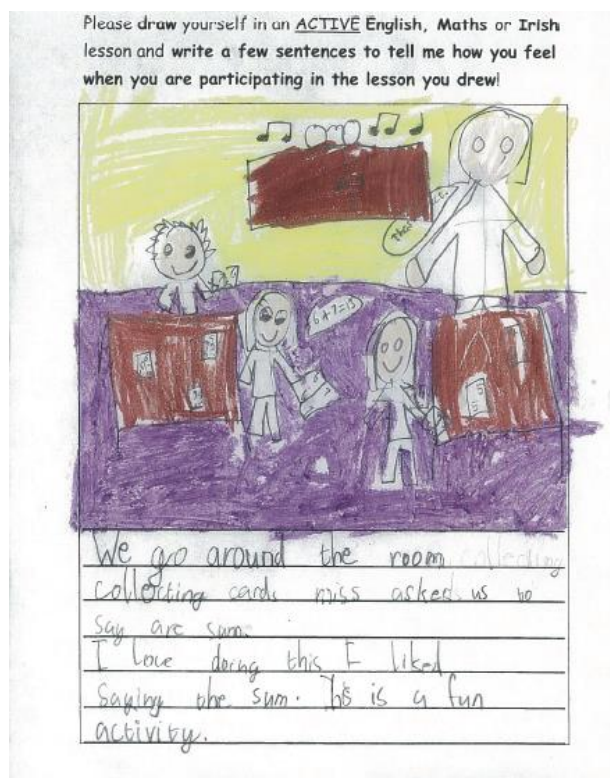
There are a number of interesting observations attributed to particular classes to note with respect to the higher frequency characteristics from the data in Table 2. Although the vast majority of the children drawn included a smiling face, the Senior Infants class (US) conveyed a significantly high level of enjoyment with the majority of the drawings including smiling faces.

It was also interesting to note that there were almost an equal number of drawings from the same class that conveyed students on their own or multiple people. A high frequency of drawings for the Jr. Infants-1<sup>st</sup> class (RS) students conveyed (i) multiple people, (ii) tables, desks and chairs, and (iii) playing cards. This could indicate that the lessons that included the playing cards (which were used in several of the maths movement lessons) and social interaction were most enjoyable for those students. The student draw-and-write shown in Figure 2 explains the context of the lesson.

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Figure 2 – Draw-and-Write (Jr. Infants-1<sup>st</sup> Class, RS, Boy)

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#### 4.2. Appreciation of learning through movement

The theme associated with learning is supported by students indicating that they either enjoyed learning more through movement or that they felt that they learned better when they were moving as opposed to sitting at their desks. The enjoyment in learning through moving is

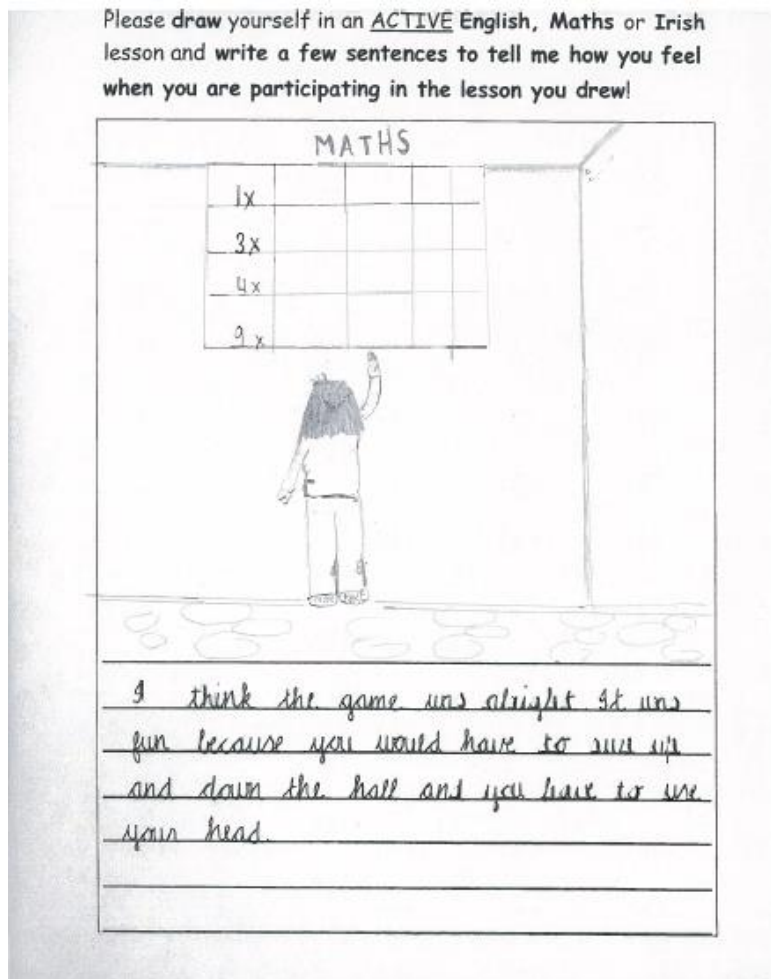


again clearly evident in the accompanying draw-and-write narratives, with older students conveying that learning can happen when moving.

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Figure 3 – Draw-and-Write (5<sup>th</sup> Class, US, Girl)

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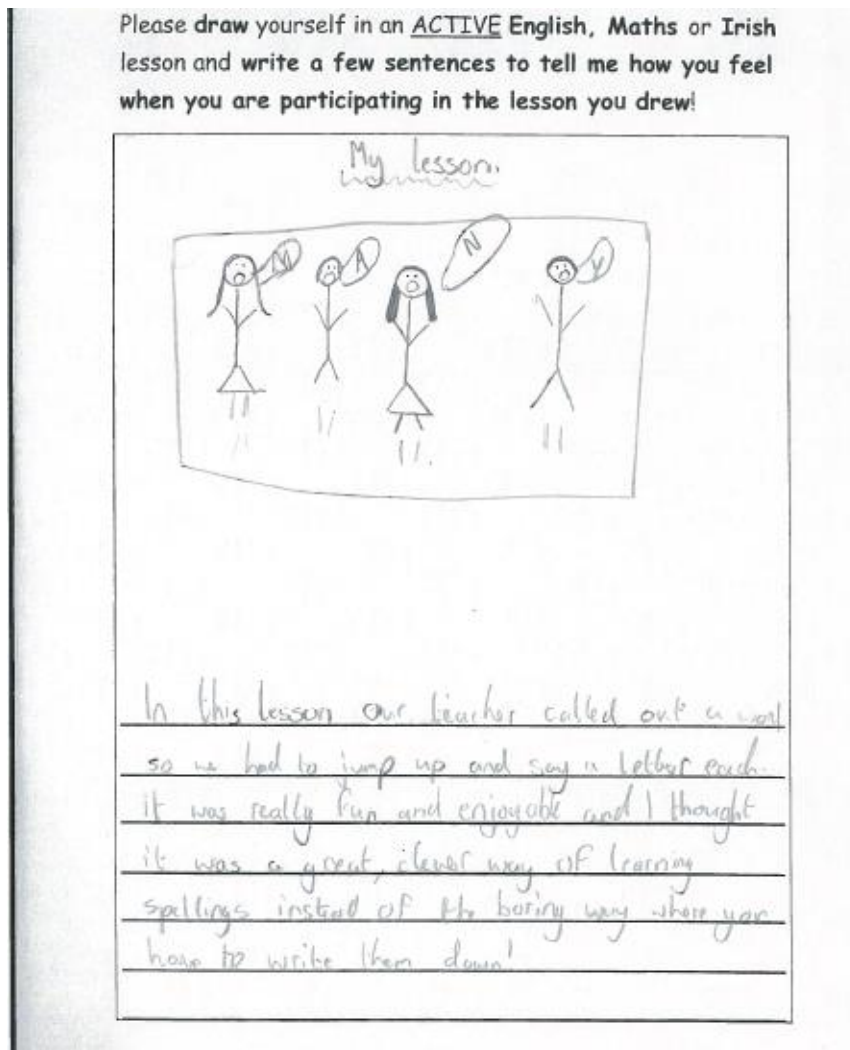
For example, a 5<sup>th</sup> class girl (US) wrote in her narrative (see Figure 3), “I think the game was alright. It was fun because you would have to run up and down the hall and you have to use your head.” Another 5<sup>th</sup> class girl (US), indicated a preference for the activity she depicted by writing, “I really enjoyed this game. I think it involved a lot of running and quick thinking. I liked it because it involved more thinking than running. Even if you weren’t athletic you could still take part.” The element of this theme related to students enjoying active learning strategies was

extremely evident in the following narrative written by a girl in the 4<sup>th</sup>-6<sup>th</sup> class (RS) who specifically stated her preference for movement lessons as opposed to the “boring way of learning” (see Figure 4).

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Figure 4 – Draw-and-Write (4<sup>th</sup>-6<sup>th</sup> Class, RS, Girl)

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Learning was also a very prominent theme in the interviews. Students frequently referred to how movement impacted their learning. For example, one 5<sup>th</sup> class girl (US) said, “You kind of remember it, you’re kind of like ‘Oh yeah, I remember learning that when I was like, doing football,’ for example. You kind of remember it more. You’re going to remember something

better if you're having fun." One exchange in the 4<sup>th</sup>-6<sup>th</sup> class (RS) interview captured a discussion on the connection the students made between movement and learning.

5<sup>th</sup> class girl: I feel like I can remember it [the subject] better when I'm up [not sitting].

Interviewer: Oh? Why is that do you think?

5<sup>th</sup> class girl: I don't know. I think when I am sitting down, it's just like, I'm getting bored and I don't want to take things in.

6<sup>th</sup> class boy: You're just writing them down. Scribble them down and you don't care and you're not interested.

4<sup>th</sup> class girl: It's better because you're doing two things at one time, and when you're sitting down, sometimes you're not concentrating.

Later in the interview the same 5<sup>th</sup> class girl as above (RS) added that she liked the movement lessons, "because some people think you can't be up [not sitting] and learning at the same time. It just shows you can. It just helps you concentrate a bit more. Get your work done." A 1<sup>st</sup> class boy (RS) supported that statement when he said, "you're doing maths at the same time and you don't have to just sit at your table. You can learn maths at the same time you're moving."

In each interview when asked if students would like more movement in their classes the responses were always positive and sometimes the students cited learning as the reason. For example, a 5<sup>th</sup> class girl (US) said that if they had more movement they would, "learn more, and probably faster." It should be noted that one student, a 3<sup>rd</sup> class boy (RS) did say that he would learn more if he was sitting down. However, he also expressed throughout the interview a desire to move more in class.

#### *4.3. Perceived physical benefits of moving the classroom*

This theme encompasses children indicating some type of effect that the activities had on their body, specifically becoming fitter and healthier, and them perceiving the movement lessons as exercise. Although there was evidence of this in the draw-and-write (i.e., students with muscles, students with sweat on their faces, etc.), this theme was more prominent in the focus group interviews.

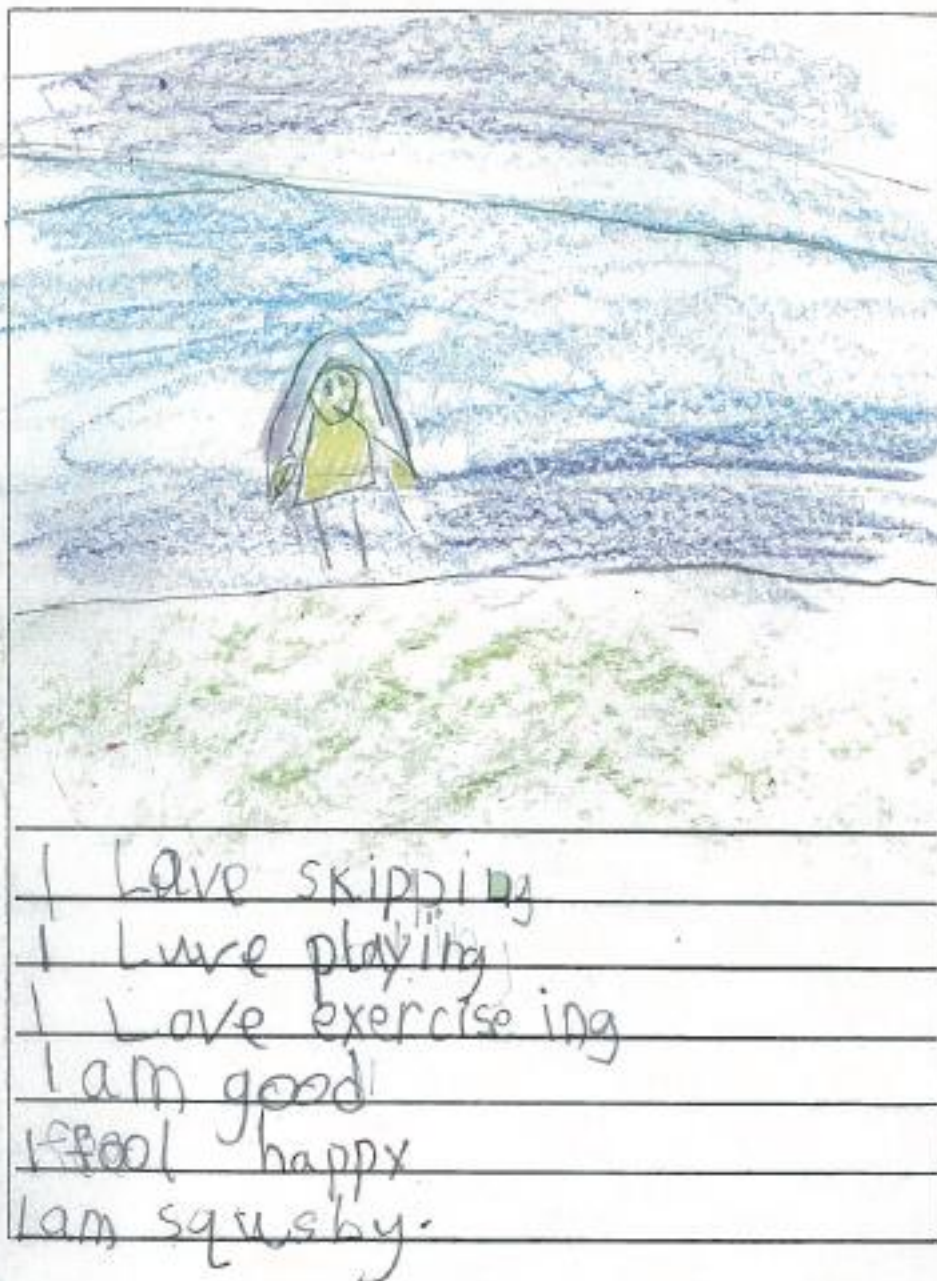
When considering the draw-and-write, the effect that physical activity can have on the body was noted more from the Sr. Infants class. This could have been impacted by the fact that, given their development level, the teacher had the class brainstorm a list of words which she wrote on the board prior to them starting the draw-and-write activity. Student-generated words such as “muscles” and “sweating” were noted on the board and likely impacted the drawings in this class. Several of the drawings from this class included children outside and children skipping. Although some of the activities in *Moving to Learn Ireland* did include skipping, it is not clear why students depicted themselves outside. For example, Figure 5 includes the work of a girl in the US Sr. Infant class that reads: “I love skipping. I luve playing. I love exerciseing. I am good. I fool happy. I am squishy. Field notes taken by one of the researchers who was present during the draw-and-write indicated that this group associated “squishy” with sweating.

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Figure 5 – Draw-and-Write (Sr. Infants, US, Girl)

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Please draw yourself in an ACTIVE English, Maths or Irish lesson and write a few sentences to tell me how you feel when you are participating in the lesson you drew!



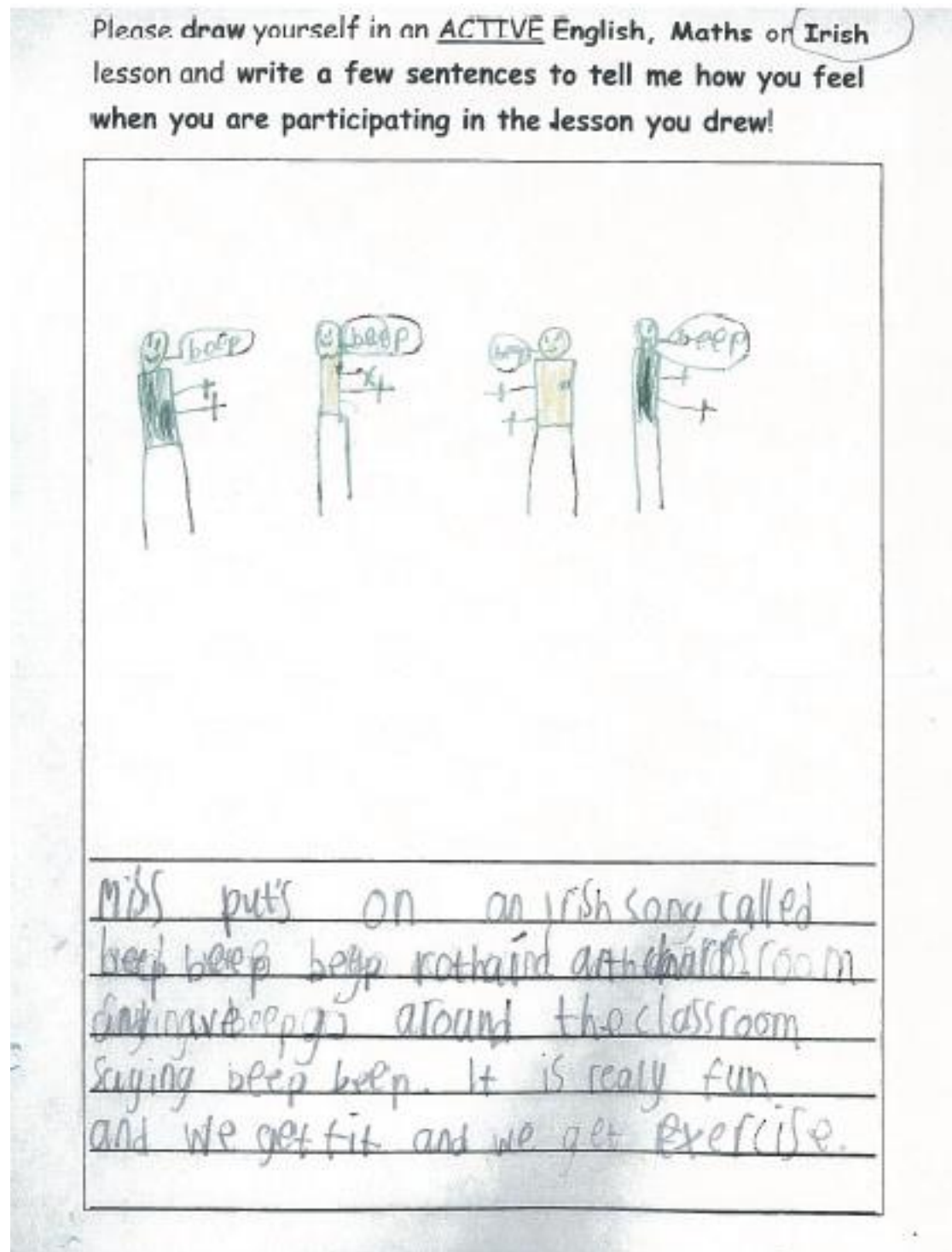
Associating the lessons with getting “fit” and “exercise” was also evident in some of the narratives. For example, a boy from the Jr. Infants-1<sup>st</sup> Class (RS), mentioned both in his narrative

that reads (see Figure 6), “Miss put’s on an irish song...we go around the classroom saying beep beep. It is really fun and we get fit and we get exercise.”

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Figure 6 – Draw-and-Write (Jr. Infants-1<sup>st</sup> Class, RS, Boy)

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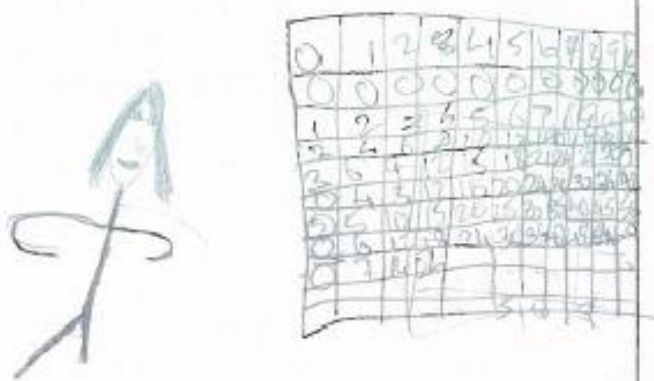




The drawing and accompanying narrative seen in Figure 7, also illustrates the notion of describing physical activity as exercise when a 5<sup>th</sup> class girl (US) wrote, “I loved this game because I found it was the only one where I felt I was actually doing exercise...the others we were either standing in the same spot or walking around.”

Figure 7 – Draw-and-Write (5<sup>th</sup> Class, US, Girl)

Please draw yourself in an ACTIVE English, Maths or Irish lesson and write a few sentences to tell me how you feel when you are participating in the lesson you drew!



0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0
1	2	3	4	5	6	7	8	9	0
2	3	4	5	6	7	8	9	0	1
3	4	5	6	7	8	9	0	1	2
4	5	6	7	8	9	0	1	2	3
5	6	7	8	9	0	1	2	3	4
6	7	8	9	0	1	2	3	4	5
7	8	9	0	1	2	3	4	5	6
8	9	0	1	2	3	4	5	6	7
9	0	1	2	3	4	5	6	7	8

I loved this game because I found it was the only one where I felt I was actually doing exercise wether the others we were either standing in the same spot or walking around.

In the interviews, several students mentioned “exercise” as a benefit of participating in *Moving to Learn Ireland*. This was interesting especially because the interviewer did not use the term exercise at all in the interview. One 2<sup>nd</sup> class girl (RS) said that moving while learning is, “more fun and you get to do lots of exercise,” and a boy from the Senior Infants class (US), said he liked moving around in the classroom because, “we can get some exercise.” At the start of his interview, when asked what the best part of the school day was, a 1<sup>st</sup> class boy (US) identified his favorite thing as, “exercising in the class.”

When considering the potential outcomes of increased movement in the classroom several students mentioned health or fitness benefits. One 5<sup>th</sup> class girl (US) said she would like increased movement in their class because:

It would be more fun and there’s lots of people in our class that probably go home and they don’t do much physical activity and even if you don’t know them, you can kind of tell. In school they struggle after half an hour of PE. They might be kind of wheezy or really sweating and then there will be some people that it won’t be bothering them.

There’s a big difference in our class, so I’d like if that kind of difference is closed more.

That there was a smaller difference between the less athletic people and the more sporty people.

The same student believed that more movement in the class might help minimize that difference in fitness levels amongst her peers.

The notion that the movement lessons could contribute to their fitness levels was not unique to the 5<sup>th</sup> class girls. A 3<sup>rd</sup> class boy (RS) said, “I think we should keep on doing it [*Moving to Learn Ireland*] so everyone would be happier and healthier.” Similarly, a 6<sup>th</sup> class



boy (RS) said he liked the movement lessons because, “You’re up and you’re active. You’re getting kinda fit as well at the same time [as learning].”

## **5. Discussion**

The purpose of this study was to describe students’ experiences of movement in the classroom based on their participation in lessons included in the *Moving to Learn Ireland* classroom movement integration resource. The discussion will consider the results as they relate to an ecological model of health behaviors (McLeroy et al., 1988).

These results provide insight into the intrapersonal level of this model, where the child resides (McLeroy et al., 1988). The inclusion of student voice as stakeholders within the school allowed us to carefully consider their perspectives – and the enjoyment of movement and their desire for more movement in schools is encouraging. The results of this study, that students enjoyed movement, also support the desires of teachers to provide enjoyable lessons for their students (Author et al, 2014). The teachers who were involved in this pilot study (results reported elsewhere) reported that their students enjoyed the activities and this perception is supported by these results. This is consistent with other studies that considered teacher perceptions. For example, Stylianou et al (2016) reported positive pupil outcomes and enjoyment of classroom-based physical activity, and specifically more enjoyment and engagement with academic subjects when physical activity is integrated. Additionally, a recent publication which describes necessary components of successful physical activity interventions with young people includes what they call “Fun, fun, fun” in order to sustain ongoing participation in the associated physical activity (van Sluijs & Kriemler, 2016).

When considering the interpersonal level of influence (McLeroy et al., 1988), students in this study seemed to derive enjoyment from their interactions and participation with peers within

the context of the physically active lessons. Given that the overwhelming majority of students in this study appeared to enjoy their movement integration experiences, this influence was likely very strong. When considering the extent to which the participants of this study engaged with the *Moving to Learn Ireland* program was controlled by the teacher, this finding is important. Had children within an individual peer group resisted the movement lessons, the influence could have had opposite and negative effects on children's perceived enjoyment of the lessons. Further, there is evidence that, for a similar age group to the study reported here, a greater sense of personal agency is evident in physical activity opportunities out of school than those within school time (Author et al., 2017). Therefore school-based physical activity initiatives, such as this one, may want to consider ways to provide a physically active school environment that is both more autonomous and supportive of student voice (Haerens et al, 2013; Aelterman, Vansteenkiste, van den Berghe, De Meyer & Haerens, 2014).

While not specifically accounted for within the results presented in the findings, it is important to consider the potential effects of the influence of the institutional (school) level (McLeroy et al., 1988). While not identified in this study's themes – students who participated in the focus group interviews were asked their favorite thing about school and what they like about school. A significant proportion of these students indicated that movement-based parts of the school day (i.e., recess, physical education, breaks) were their favorite part of the day. Additionally, when asked what they liked to do outside of school, many of them responded with their favorite sport or physical activity. Therefore, it is logical to suggest that the students who were more active outside of school were positively predisposed to physical activity enjoyment at school. The community level is more complex and cannot be commented on here because the relationships with other organizations were not revealed within the results of this study.

From the policy level (McLeroy et al., 1988), and considering the traditionally sedentary nature of schools, especially in Ireland where this study took place (Harrington et al., 2016), the fact that children in this study perceived that they could learn while moving, and at times could learn more or faster if they were moving, is significant. While specific academic outcomes were not considered in this study, a recent systematic review of nine studies considering the association between physical activity participation and academic performance reported positive effects (Sullivan et al, 2017). However, there were some contradicting findings in the review. Inconsistent findings relating to academic performance was also reported by Mullender-Wijnsma and colleagues (2015) who reported improvements for grade three children, but not grade two children in their study. Although the current study did not consider academic improvement objectively, it is encouraging that the students in this study associated moving in the classroom with learning.

It was perhaps most interesting that the children in this study made connections between the movement integration activities and potential health benefits for themselves and for their peers. A recent systematic review of studies that included physically active lessons in the classroom did report positive findings related to physical activity levels and health outcomes (Martin & Murtagh, 2015). When considering students' knowledge and understanding, it is encouraging that children seem to understand that more movement can positively impact their overall health and fitness outside school.

### *5.1. Limitations*

Although every effort was taken by the research team to ensure the reliability of the data collected in this study, some limitations must be considered. First, the age of the participants (5-12 years old) is a limitation given that children can be easily influenced by their peers, and in this

instance teachers, and may not be able to accurately convey their feelings (either drawn, written or spoken). They may also not be aware of certain aspects of the school and school culture that influence their physical activity participation. Second, the procedures for the draw-and-write differed slightly from class-to-class based on the level of involvement of the teacher and the amount of social interaction between the students during the activity. For example, in one classroom (i.e., the Senior Infants [US]) the teacher wrote words on the board after a class brainstorming session, but the drawings were created without interference/guidance from the teacher. Third, although students were encouraged to complete the draw-and-write individually, the configuration of some classrooms included group tables, which encouraged students to collaborate on their drawings and resulted in some similar ideas being generated by specific tables of students. Lastly, it is possible that given the teachers selected the students who participated in the focus group interviews, they may have inadvertently selected more active students who enjoy movement. Therefore, some bias towards positive associations with movement and physical activity is possible among the focus group interview participants.

## *5.2. Conclusions*

Children who participated in this study positively perceived movement integration lessons in their classrooms. They reported that the physically active academic lessons were fun, provided them with an opportunity to learn (sometimes better than when sitting), and provided them with additional exercise throughout the school day. Additional research should consider using measures relating to learning and health benefits along with the student perspective and whether or not a more physically active school environment has long-term influences on children's physical activity participation.

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